Suisun Marsh Monitoring Program
Channel Water Salinity Report

Reporting Period: February 2002

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SUISUN MARSH MONITORING STATIONS AND REPORTING REQUIREMENT

The California Department of Water Resources (DWR) is required to provide monthly channel water salinity compliance reports for the Suisun Marsh to the SWRCB. This requirement is based on SWRCB Water Rights Decision 1641, dated December 29, 1999, and previous SWRCB decisions. Channel water salinity conditions in the Suisun Marsh are determined by monitoring specific electrical conductivity. Specific electrical conductivity is referred to in the reports as "specific conductance".

The locations of all listed stations are shown in Figure 5.

The monthly reports are submitted for October through May each year in accordance with SWRCB requirements. The reports are required to include salinity data from the stations listed below:

Station Identification	Station Name	General Location	Status
C-2	Collinsville	Western Delta	Compliance Station
S-64	National Steel	Eastern Suisun Marsh	Compliance Station
S-49	Beldon's Landing	North-Central Suisun Marsh	Compliance Station
S-42	Volanti	North-Western Suisun Marsh	Compliance Station
S-21	Sunrise	North-Western Suisun Marsh	Compliance Station

Data from the stations listed below are included in the monthly reports to provide information on salinity conditions in the western Suisun Marsh.

Station Identification	Station Name	General Location	Status
S-97	Ibis	Western Suisun Marsh	Monitoring Station
S-35	Morrow Island	South-Western Suisun Marsh	Monitoring Station

Information on Delta outflow, area rainfall, and operation of the Suisun Marsh Salinity Control Gates is included in the monthly reports to provide information on conditions that may affect channel water salinity in the Marsh.

The reader will likely notice the absence of data from C-2 from the report. In early December 2001 a large floating dock segment struck the EC probe pipe, rendering it incapable of collecting EC readings. To supplement the loss of C-2, data from monitoring station C-2B has been included in this report; and, although not officially a designated a compliance station by SWRCB, C-2B is C-2's intended replacement. In the following text, therefore, C-2B has taken the place of C-2 in both tables and graphs.

RESULTS

Channel Water Salinity Compliance

State Water Resources Control Board channel water salinity standards for the Suisun Marsh were met at all five compliance stations during February 2002 (Table 1). Compliance with channel water salinity standards was determined for each compliance station by comparing February mean high-tide specific conductance (SC) with their respective standards. The standard for Marsh compliance stations for February 2002 was 8.0 millisiemens per centimeter (mS/cm). Table 1 lists monthly mean high-tide SC at the compliance stations.

The progressive monthly mean SC for each station is used to track salinity conditions during each month (Figures 1 and 2). The progressive mean is calculated for each compliance station by averaging mean high-tide SC for a given day and all previous days of that month. New progressive mean calculations begin at the start of each calendar month.

Delta Outflow

Low Delta outflow occurred in February 2002 (Figure 3). The monthly mean Net Delta Outflow Index (NDOI) for February is listed below:

Month	Mean NDOI (cubic feet per second)
February	12,255

The NDOI is the estimated average daily rate of outflow from the Delta.

Rainfall

Total monthly rainfall at the Waterman Gauging Station in Fairfield during February 2002 is listed below:

Month	Total Rainfall (inches)
February	1.37

Suisun Marsh Salinity Control Gate (SMSCG) Operations

The SMSCG were under normal operation at full bore for February 2002 with flashboards in place with operating boat lock.

Date	Flashboard / boat lock Status	Gate Status
February 1 – February 28	In place / Operational	Tidal Operation

DISCUSSION

Factors Affecting Channel Water Salinity in the Suisun Marsh

Factors that affect channel water salinity levels in the Suisun Marsh include:

- delta outflow;
- tidal exchange;
- rainfall and local creek inflow;
- managed wetland operations; and,
- operation of the SMSCG and flashboard configurations.

The State Water Resources Control Board, in 2001, approved another three years of study on the Suisun Marsh Salinity Control Gates to evaluate a method to allow unimpeded passage of adult salmon past the gates on their upstream migration. The evaluation of the modified flashboards was discontinued after two years because it is was not successful. The new study is to evaluate the effectiveness of leaving the boat lock open when the gates are operating. The boat lock evaluation started in the fall of 2001 and will continue through the fall of 2003.

Observations and Trends

Conditions during the Reporting Period

Channel water salinity conditions in the Marsh met the standard in February 2002. Compliance station values gradually increased throughout the month, ending with slightly higher values than at the beginning of the month (Figure 1). Monitoring stations

S-35 and S-97 remained relatively constant during the month, with only a very slight increase by February's end (Figure 2). The slight salinity increase occurred in spite of an increase in NDOI from February 24 through February 27 (Figure 3). This suggests that the NDOI increase was not enough to significantly influence the salinity at any of the reporting stations.

Comparison of Reporting Period Conditions with Previous Years

Monthly mean high-tide SC at the compliance and monitoring stations for February 2002 were compared with means for those months during the previous nine years (Figure 4). The conductance values for this year resembles 2001 and 1994 in magnitude and in relative distribution between reporting stations. The reason for this similarity remains unclear as both precipitation totals of 2001 (6.35 in.) and 1994 (4.25 in.) are noticeably higher than February 2002 (1.37 in.).

Table 1

Monthly Mean High Tide Specific Conductance at Suisun Marsh Water Quality Compliance Stations

February 2002

Station	Specific Conductance (mS/cm)*
Collinsville, C-2B	1.1
National Steel, S-64	3.4
Beldon's Landing, S-49	4.8**
Volanti, S-42	5.3
Sunrise Club, S-21	5.1

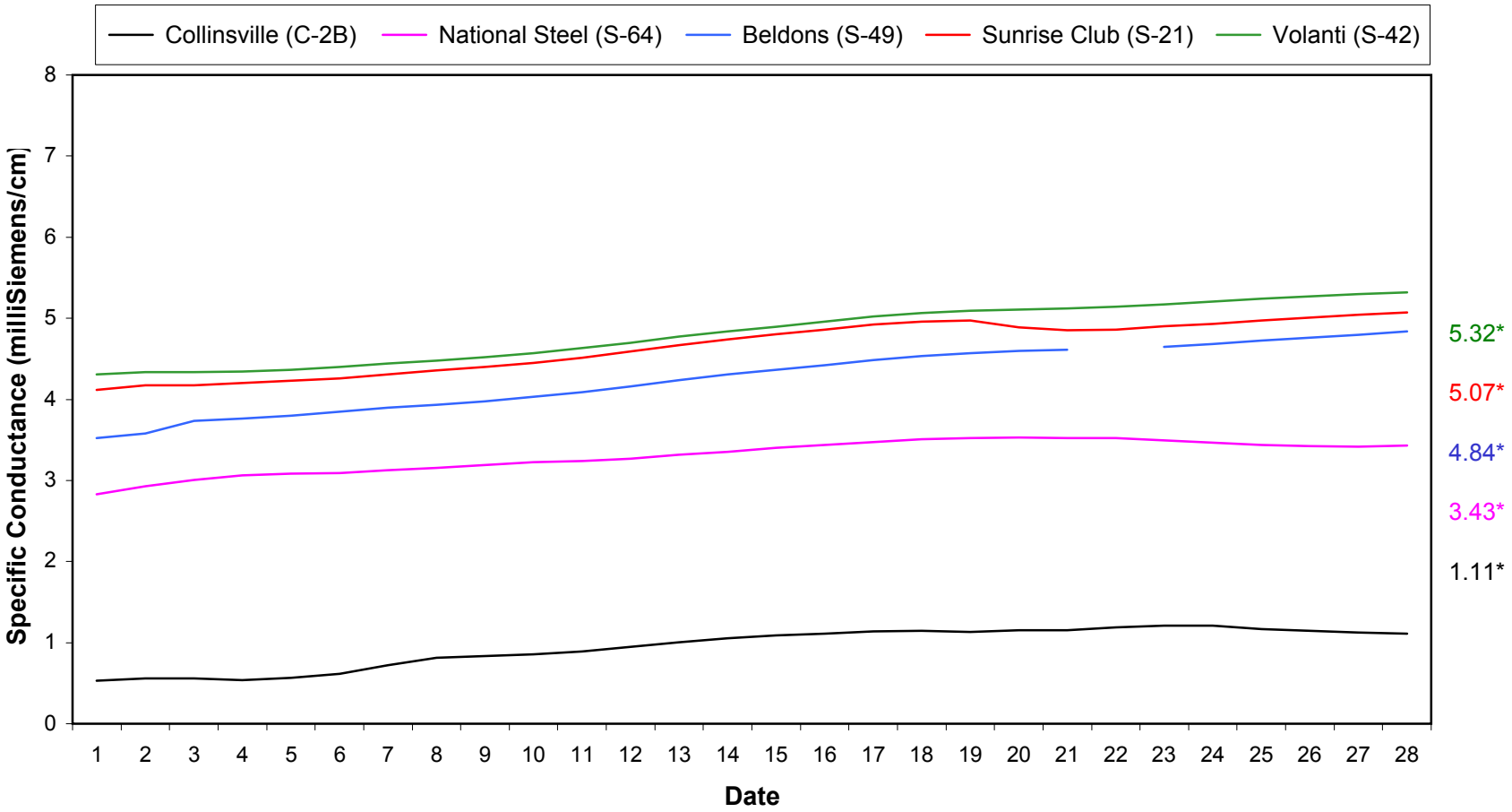
*= milliSiemens per centimeter

**= value does not reflect end of month means due to equipment failure during the month

Note: SWRCB standard for February for is 8.0 mS/cm.

Figure 1. Suisun Marsh Calendar Month Progressive Mean of the Specific Conductance at High Tide February 2002

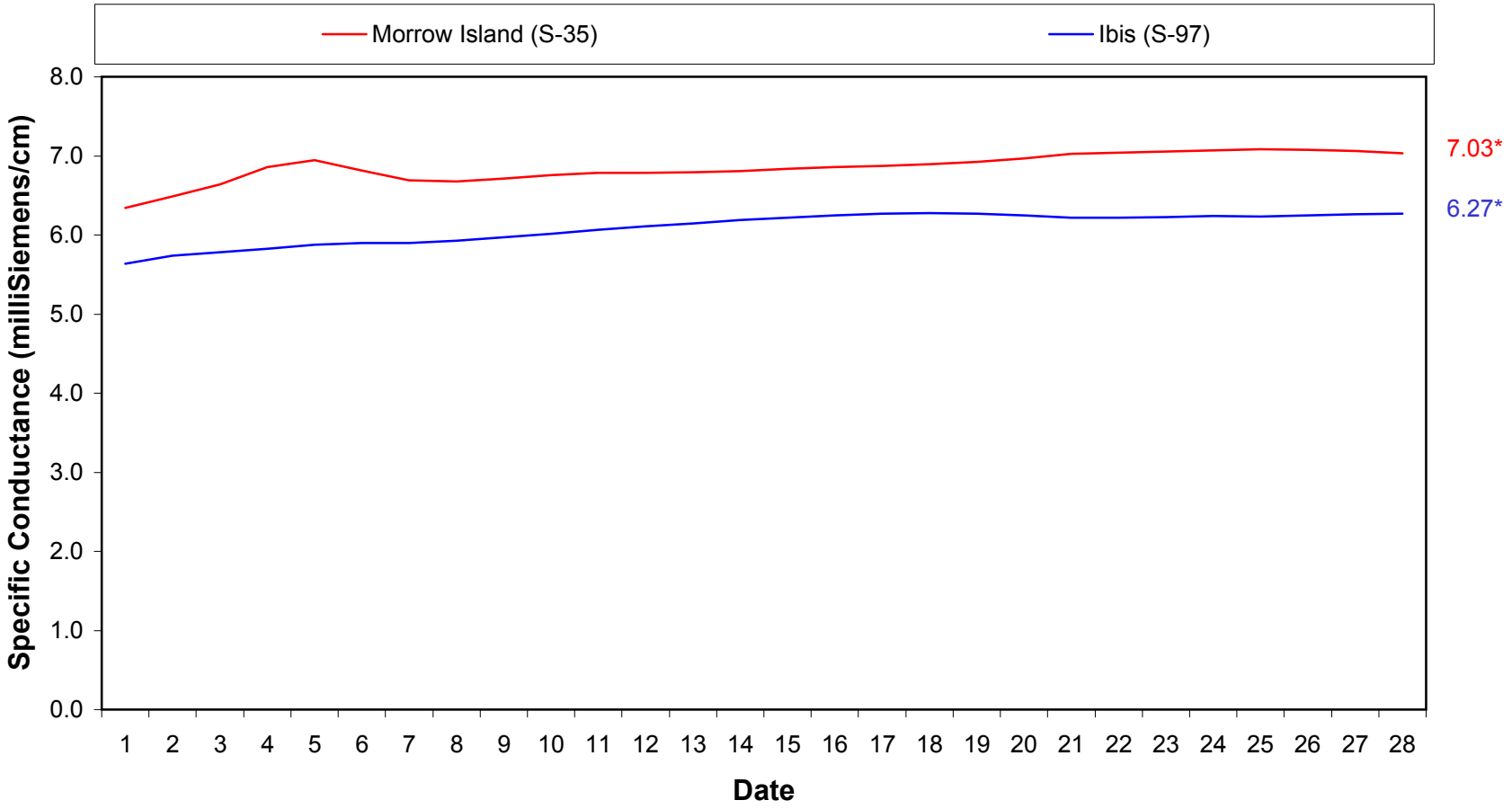
Standard = 8.0 mS/cm



* = monthly mean specific electrical conductance at high tide.

Note: Data missing from S-49 on February 22 due to equipment malfunction.

Figure 2. Suisun Marsh Mean Daily High Tide Specific Conductance at Monitoring Stations S-35, S-97 February 2002



* = monthly mean specific electrical conductance at high tide.

Figure 3. Daily Net Delta Outflow Index For February 2002

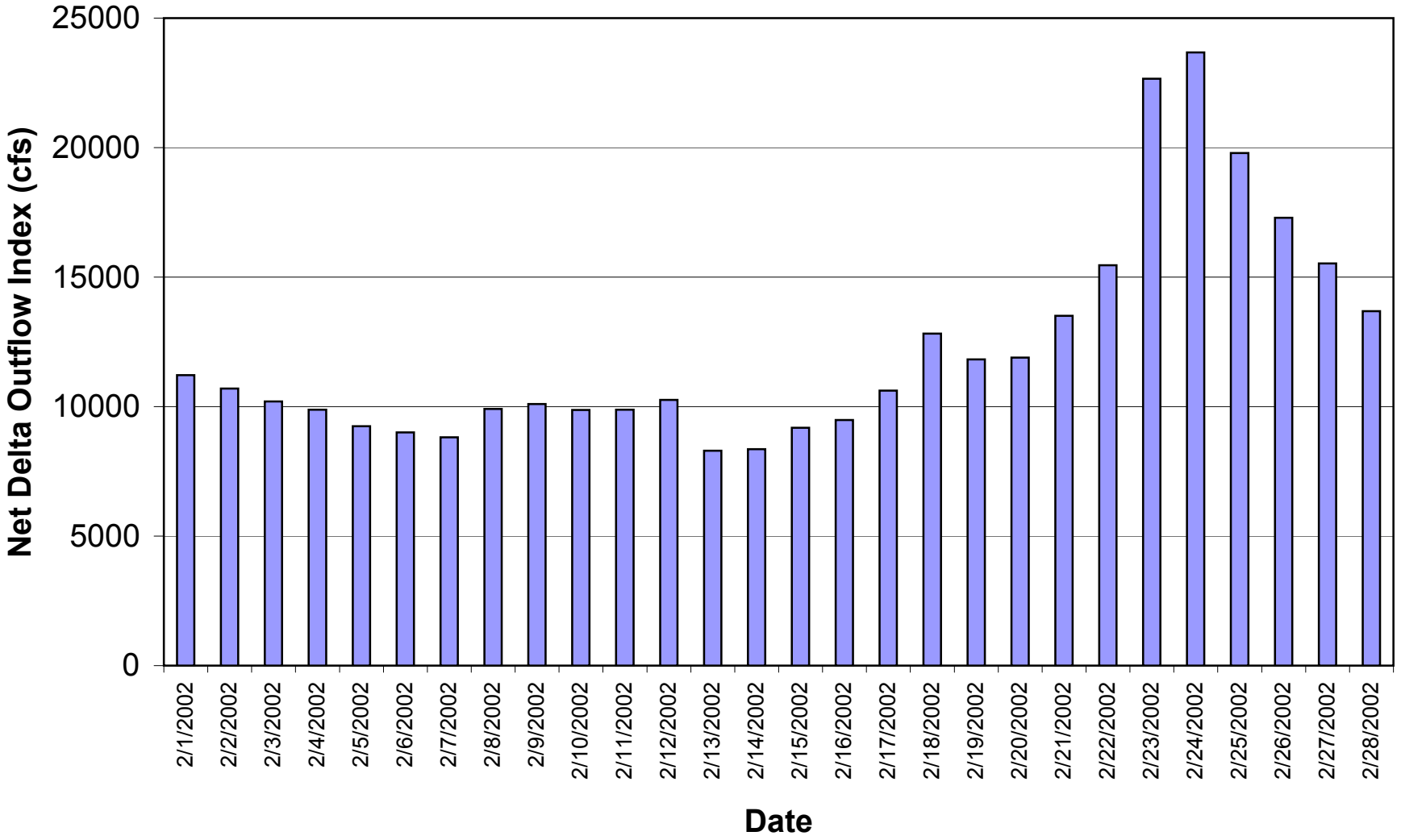
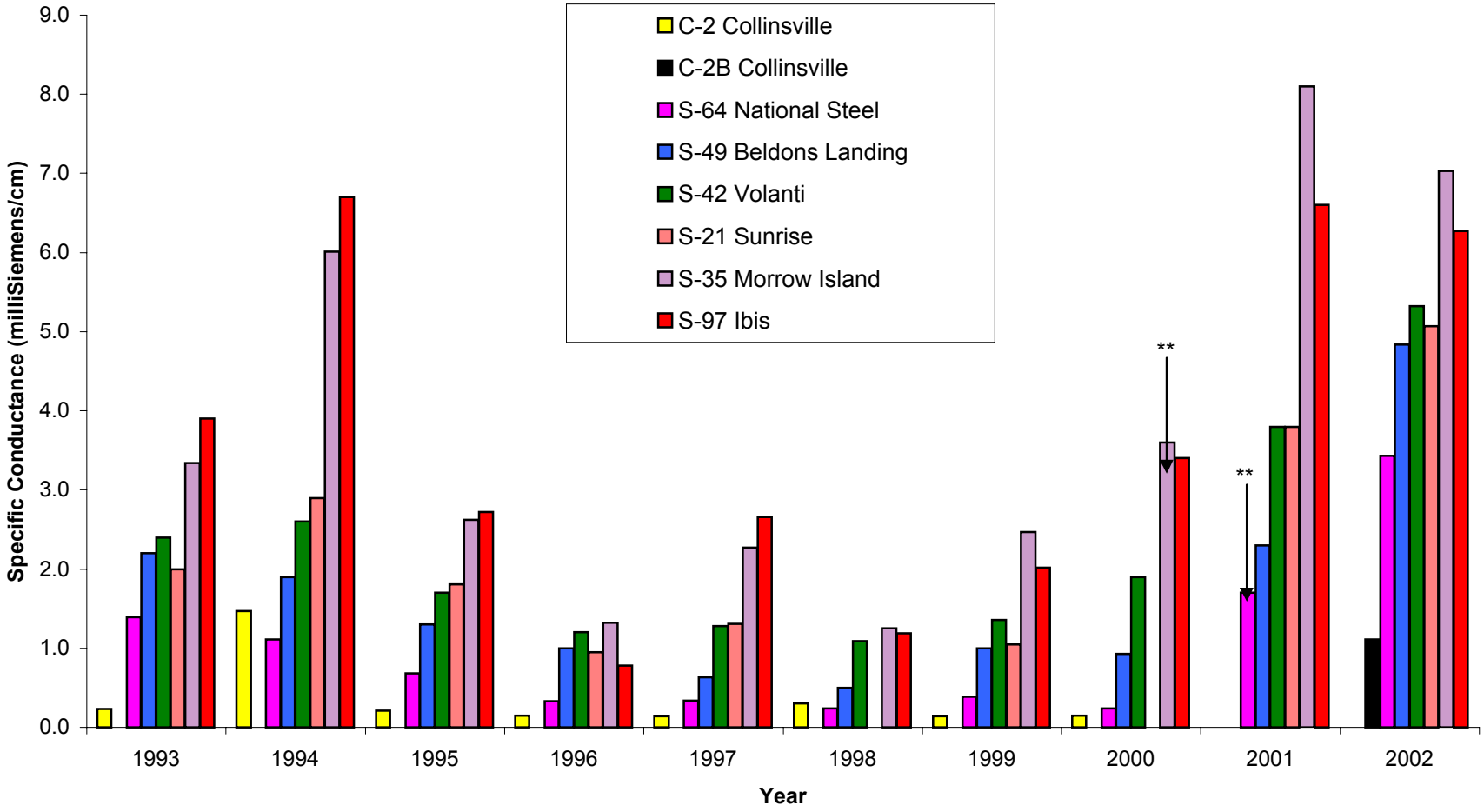
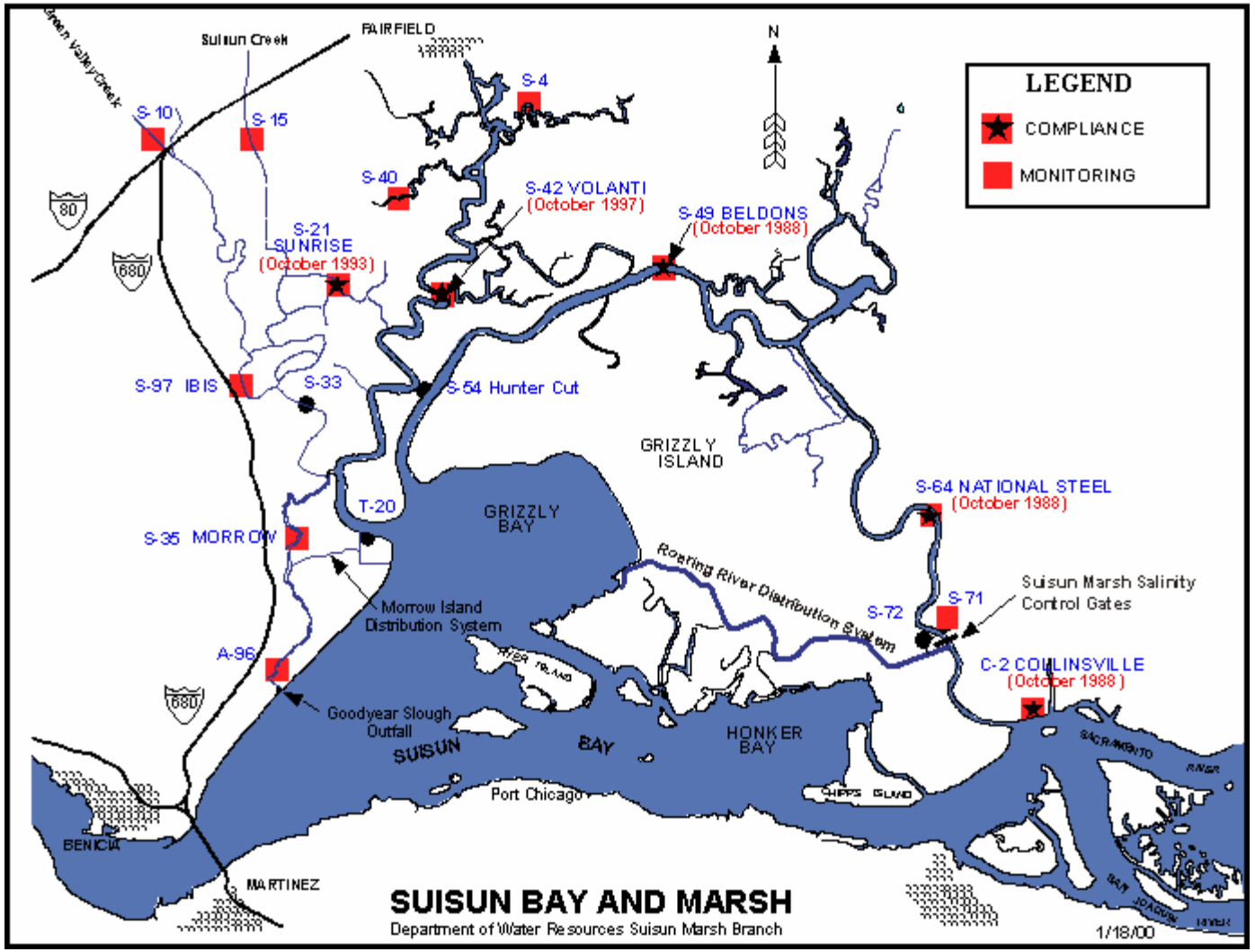


Figure 4. Monthly Mean Specific Conductance at High Tide: Comparison of Monthly Values for Selected Stations February of 1993-2002



** = beginning in 2000.

Figure 5


LEGEND
COMPLIANCE
MONITORING
N
Suisun Creek
FAIRFIELD
S-10
S-15
S-4
S-40
S-42 VOLANTI
(October 1997)
S-49 BELDONS
(October 1988)
S-21
SUNRISE
(October 1993)
S-97 IBIS
S-33
S-54 Hunter Cut
GRIZZLY
ISLAND
S-64 NATIONAL STEEL
(October 1988)
T-20
GRIZZLY
BAY
S-35 MORROW
Roaring River Distribution System
Suisun Marsh Salinity
Control Gates
S-72
S-71
Morrow Island
Distribution System
A-96
C-2 COLLINSVILLE
(October 1988)
Goodyear Slough
Outfall
SUISUN
BAY
HONKER
BAY
Port Chicago
BENICIA
MARTINEZ
SUISUN BAY AND MARSH
Department of Water Resources Suisun Marsh Branch
1/18/00